Claims

1. A process for the production of hydrocarbons and ammonia, the process including the steps of:

extracting hydrogen from a synthesis gas in a hydrocarbon synthesis process prior to the synthesis gas entering a Fischer-Tropsch reactor; and

feeding at least a portion of the extracted hydrogen into an ammonia synthesis process.

2. A process as claimed in claim 1, wherein the hydrogen is extracted from a product stream of a reforming section of the hydrocarbon synthesis process.

3. A process as claimed in claim 2, wherein the hydrogen is extracted from the reforming section until a H_2/CO ratio of synthesis gas fed to the hydrocarbon synthesis process is lower than or equal to 2.5.

4. A process as claimed in claim 3, wherein the H_2/CO ratio is lower than or equal to 2.

5. A process as claimed in claim 1, wherein a portion of the synthesis gas is sent to a hydrogen extraction unit and is divided into a hydrogen-rich stream, at least a portion of which is fed into the ammonia synthesis process, and a hydrogen-poor stream.

6. A process as claimed in claim 5, wherein the hydrogen-poor stream is returned to the hydrocarbon synthesis process.

7. A process as claimed in claim 5, wherein the hydrogen-poor stream is used as fuel gas.

8. A process as claimed in claim 5, wherein CO and/or CO_2 are removed from the hydrogen-poor stream.

9. A process as claimed in claim 1, wherein at least a portion of CO_2 is removed from a synthesis gas stream prior to the synthesis gas stream entering the Fischer-Tropsch reactor.

10. A process as claimed in claim 1, wherein a portion of the Fischer-Tropsch tail gas is returned to the reforming section of the hydrocarbon synthesis process.

11. A process as claimed in claim 1, wherein one air separation means is used for both the hydrocarbon synthesis process and the ammonia synthesis process.

12. A process as claimed in claim 1, wherein one reforming section is used for both the hydrocarbon synthesis process and the ammonia synthesis process.

13. A hydrocarbon produced according to the process described in claim 1.

14. A diesel product produced according to the process described in claim 1.

15. A naptha product produced according to the process described in claim 1.

16. Ammonia produced according to the process described in claim 1.

17. A combined hydrocarbon synthesis plant and ammonia synthesis plant, including means for extracting hydrogen from a reforming section

of the hydrocarbon synthesis plant and feeding at least a portion of the extracted hydrogen into the ammonia synthesis plant.

18. A combined hydrocarbon synthesis plant and ammonia synthesis plant as claimed in claim 17, wherein an air separation means is shared by both the hydrocarbon synthesis and ammonia synthesis plants.

19. A combined hydrocarbon synthesis plant and ammonia synthesis plant as claimed in claim 17, wherein a reforming section is shared by both the hydrocarbon synthesis and ammonia synthesis plants.

20. A combined hydrocarbon synthesis plant and ammonia synthesis plant as claimed in claim 17, which includes means for separating at least a portion of the synthesis gas into a hydrogen-rich stream and a hydrogen-poor stream prior to feeding at least a portion of the hydrogen-rich stream into the ammonia synthesis plant.

21. A combined hydrocarbon synthesis plant and ammonia synthesis plant as claimed in claim 20, which includes means for returning the hydrogen-poor stream to the hydrocarbon synthesis plant.

22. A combined hydrocarbon synthesis plant and ammonia synthesis plant as claimed in claim 17, which includes means for returning at least a portion of the hydrocarbon synthesis tail gas to the reforming section.

23. A combined hydrocarbon synthesis plant and ammonia synthesis plant as claimed in claim 17, which includes means for feeding at least a portion of the extracted hydrogen into a hydroprocessing section of the hydrocarbon synthesis plant.